

WHAT IS CLAIMED IS:

- 1        1. A method of updating parity data in a redundant array of independent disk  
2        (RAID) clustered environment comprising:
  - 3            (a) locking parity data, without communicating with other nodes, for data  
4        managed in SCSI (small computer systems interface) disks in a RAID clustered system,  
5        wherein the locking prevents other nodes from modifying the parity;
  - 6            (b) reading the parity data;
  - 7            (c) generating new parity data by exclusive oring data from a first node and a  
8        second node;
  - 9            (d) writing the parity data to a SCSI disk in the RAID system; and  
10          (e) unlocking the parity data.
- 1        2. The method of claim 1, wherein the locking comprises issuing a RESERVE  
2        command.
- 1        3. The method of claim 1, wherein the unlocking comprises issuing a RELEASE  
2        command.
- 1        4. The method of claim 1, wherein the locking and reading steps are combined.
- 1        5. The method of claim 1, wherein the writing and unlocking steps are  
2        combined.
- 1        6. The method of claim 1 wherein the RAID system is RAID-4.

1        7.     The method of claim 1 wherein the RAID system is RAID-5.

1        8.     The method of claim 1 wherein the RAID system is RAID-6.

1        9.     An apparatus for updating parity data in a redundant array of independent  
2     disk (RAID) clustered environment comprising:

3              (a)    a plurality of SCSI (small computer systems interface) storage devices  
4     organized in a RAID clustered system;

5              (b)    data stored in the plurality of SCSI storage devices;

6              (b)    a first node, operatively coupled to the SCSI storage devices, that manages  
7     storage and retrieval of the data in the data storage devices, wherein the first node is  
8     configured to:

9                  (i)    lock parity data without communicating with other nodes, wherein  
10    the lock prevents other nodes from modifying the parity;

11                (ii)    read the parity data;

12                (iii)    generate new parity data by exclusive oring data from two nodes;

13                (iv)    write the parity data to a SCSI disk in the RAID system; and

14                (v)    unlock the parity data.

1        10.    The apparatus of claim 9, wherein the first node locks the parity data by  
2     issuing a RESERVE command.

1        11.    The apparatus of claim 9, wherein the first node unlocks the parity data by  
2     issuing a RELEASE command.

1           12.     The apparatus of claim 9, wherein the first node is further configured to  
2     combine the logic for locking and reading.

1           13.     The apparatus of claim 9, wherein the first node is further configured to  
2     combine the logic for writing and unlocking.

1           14.     The apparatus of claim 9 wherein the RAID system is RAID-4.

1           15.     The apparatus of claim 9 wherein the RAID system is RAID-5.

1           16.     The apparatus of claim 9 wherein the RAID system is RAID-6.

1           17.     An article of manufacture, embodying logic to perform method steps of  
2     updating parity data in a redundant array of independent disk (RAID) clustered  
3     environment, the method steps comprising the steps of:

4           (a)     locking parity data without communicating with other nodes, wherein the  
5     locking prevents other nodes from modifying the parity;

6           (b)     reading the parity data;

7           (c)     generating new parity data by exclusive oring data from two nodes;

8           (d)     writing the parity data to a SCSI (small computer systems interface) disk in  
9     the RAID system; and

10          (e)     unlocking the parity data.

1           18.     The article of manufacture of claim 17, wherein the locking comprises  
2     issuing a RESERVE command.

1           19. The article of manufacture of claim 17, wherein the unlocking comprises  
2 issuing a RELEASE command.

1           20. The article of manufacture of claim 17, wherein the locking and reading steps  
2 are combined.

1           21. The article of manufacture of claim 17, wherein the writing and unlocking  
2 steps are combined.

1           22. The article of manufacture of claim 17 wherein the RAID system is RAID-4.

1           23. The article of manufacture of claim 17 wherein the RAID system is RAID-5.

1           24. The article of manufacture of claim 17 wherein the RAID system is RAID-6.